

LASER PATTERNING OF LIGHT EMITTING DEVICES AND PATTERNED LIGHT EMITTING DEVICES

Abstract of the Disclosure

Light extraction features are provided for a light emitting device having a substrate and a semiconductor light emitting element on the substrate by shaping a surface of a layer of semiconductor material utilizing a laser to define three
5 dimensional patterns in the layer of semiconductor material. The layer of semiconductor material may be the substrate. In particular embodiments of the present invention, the surface of the layer of semiconductor material is shaped by applying laser light to the layer of semiconductor material at an energy sufficient to remove material from the layer of semiconductor material. The laser light may also
10 by applied in a blanket manner at a level below the ablation threshold. The application of laser light to the layer of semiconductor material may be followed by etching the substrate. The layer of semiconductor material may be anisotropically etched. A mask could also be patterned utilizing laser light and the layer of semiconductor material etched using the mask. Light emitting devices have three
15 dimensional patterns in a layer of semiconductor material of the device are also provided.